CLAIMS:

1. Method for dressing a grinding surface (11, 11a, 11b) of a grinding tool (2, 3, 10), comprising the following steps:

- positioning at least a portion of an electrode (60, 60a, 60b) in the vicinity of at least a portion of the grinding surface (11, 11a, 11b), such that a dressing area (75, 75a, 75b) is obtained in which a relatively small gap is present between the electrode (60, 60a, 60b) and the grinding surface (11, 11a, 11b);
- feeding electrolyte to the dressing area (75, 75a, 75b); and
- bringing about an electric current between the grinding surface (11, 11a, 11b) and the electrode (60, 60a, 60b), via the electrolyte;

wherein the electrode (60, 60a, 60b) is moved with respect to the dressing area (75, 75a, 75b).

2. Dressing process according to claim 1, wherein the electrode (60, 60a, 60b) is rotated about a rotation axis (61, 61a).

3. Dressing process according to claim 1 or 2, wherein the electrode (60, 60a, 60b) performs a wobbling movement.

4. Dressing process according to claim 3, wherein the electrode (60, 60a, 60b) is moved according to a combination of a curved reciprocating movement about an axis (16, 26) and a linear reciprocating movement in the direction of the same axis (16, 28).

5. Dressing process according to any of claims 1-4, wherein at least one portion of the electrode (60, 60a, 60b) is brushed, preferably by means of a brush (90a, 90b).

6. Dressing process according to any of claims 1-5, wherein a portion of the grinding surface (11, 11a, 11b), other than a portion being subjected to the dressing treatment, contacts a workpiece (40), and wherein the grinding surface (11, 11a, 11b) and the

workpiece (40) move with respect to each other, such that the workpiece (40) is subjected to a grinding treatment.

7. Grinding machine (1), especially for carrying out the process according to any of claims 1-6, comprising:

- a grinding tool (2, 3, 10) having at least one grinding surface (11, 11a, 11b);
- at least one electrode (60, 60a, 60b), which is positioned in the vicinity of at least a portion of the grinding surface (11, 11a, 11b), such that a dressing area (75, 75a, 75b) is obtained in which a relatively small gap is present between the electrode (60, 60a, 60b) and the grinding surface (11, 11a, 11b);
- feed means (70) for feeding electrolyte to the dressing area (75, 75a, 75b); and
- a generator (20) for generating an electric current between the grinding surface (11, 11a, 11b) and the electrode (60, 60a, 60b), via the electrolyte;

wherein the electrode (60, 60a, 60b) is movable with respect to the dressing area (75, 75a, 75b).

8. Grinding machine (1) according to claim 7, wherein the electrode (60, 60a, 60b) is disc-shaped, comprising a flat upper surface (65).

9. Grinding machine (1) according to claim 7 or 8, wherein the electrode (60, 60a, 60b) is rotatable about a rotation axis (61, 61a).

10. Grinding machine (1) according to claim 7, wherein the electrode (60, 60a, 60b) comprises a concave dressing surface (64).

11. Grinding machine (1) according to claim 10, wherein the electrode (60, 60a, 60b) is arranged such as to be able to perform a wobbling movement.

12. Grinding machine (1) according to claim 11, wherein the electrode (60, 60a, 60b) is arranged such as to be able to simultaneously perform a curved reciprocating movement about an axis (16, 28) and a linear reciprocating movement in the direction of the same axis (16, 28).

13. Grinding machine (1) according to any of claims 7-12, comprising brushing means (90a, 90b) for brushing at least one portion of the electrode (60, 60a, 60b), wherein the brushing means (90a, 90b) are arranged outside the dressing area (75, 75a, 75b).

14. Grinding machine (1) according to any of claims 7-13, wherein the electrode (60, 60a, 60b) is provided with holes (62), and wherein one side of at least a portion of the holes (62) ends up in the dressing area (75, 75a, 75b).

15. Grinding machine (1) according to claim 14, wherein the feed means (70) are arranged such as to feed electrolyte to the dressing area (75, 75a, 75b) through the holes (62) in the electrode (60, 60a, 60b).

16. Grinding machine (1), comprising:
- a grinding tool (2, 3, 10) having at least one grinding surface (11, 11a, 11b);
- at least one electrode (60, 60a, 60b), which is positioned in the vicinity of at least a portion of the grinding surface (11, 11a, 11b), such that a dressing area (75, 75a, 75b) is obtained in which a relatively small gap is present between the electrode (60, 60a, 60b) and the grinding surface (11, 11a, 11b);
- feed means (70) for feeding electrolyte to the dressing area (75, 75a, 75b); and
- a generator (20) for generating an electric current between the grinding surface (11, 11a, 11b) and the electrode (60, 60a, 60b), via the electrolyte;
wherein the electrode (60, 60a, 60b) is provided with holes (62), and wherein one side of at least a portion of the holes (62) ends up in the dressing area (75, 75a, 75b).

17. Grinding machine (1) according to claim 16, wherein the feed means (70) are arranged such as to feed electrolyte to the dressing area (75, 75a, 75b) through the holes (62) in the electrode (60, 60a, 60b).

18. Grinding machine (1) according to claim 16 or 17, wherein the electrode (60, 60a, 60b) is movable with respect to the dressing area (75, 75a, 75b).

19. Electrode (60, 60a, 60b) being provided with a pattern of holes (62) such that, in case the electrode (60, 60a, 60b) is positioned in the vicinity of a grinding surface (11, 11a, 11b) of a grinding tool (2, 3, 10) for the purpose of dressing the grinding surface (11, 11a,

11b) by means of an electrolytic process, one side of at least a portion of the holes (62) ends up in a dressing area (75, 75a, 75b) between the electrode (60, 60a, 60b) and the grinding surface (11, 11a, 11b).

20. Process for dressing at least two grinding surfaces (11a, 11b) of one grinding tool (2) simultaneously, comprising the following steps:

- assigning at least a portion of an electrode (60a, 60b) to at least a portion of each grinding surface (11a, 11b);
- positioning the electrodes (60a, 60b) in the vicinity of the respective grinding surfaces (11a, 11b), such that dressing areas (75a, 75b) are obtained in which a relatively small gap is present between the electrodes (60a, 60b) and the respective grinding surfaces (11a, 11b);
- feeding electrolyte to the dressing areas (75a, 75b); and
- bringing about an electric current between the grinding surfaces (11a, 11b) and the electrodes (60a, 60b), via the electrolyte.

21. Dressing process according to claim 20, wherein at least one electrode (60a, 60b) is moved with respect to the respective dressing area (75a, 75b).

22. Dressing process according to claim 21, wherein the electrode (60a) is rotated about a rotation axis (61a).

23. Dressing process according to claim 21, wherein the electrode (60b) performs a wobbling movement.

24. Dressing process according to claim 23, wherein the electrode (60b) is moved according to a combination of a curved reciprocating movement about a rotation axis (28) of the grinding tool (2) and a linear reciprocating movement in the direction of the same axis (28).

25. Dressing process according to any of claims 20-24, wherein at least one portion of at least one electrode (60a, 60b) is brushed, preferably by means of a brush (90a, 90b).

26. Dressing process according to any of claims 20-25, wherein a portion of at least one grinding surface (11a, 11b), other than a portion being subjected to the dressing treatment, contacts a workpiece (40), and wherein the grinding surface (11a, 11b) and the workpiece (40) move with respect to each other, such that the workpiece (40) is subjected to a grinding treatment.

27. Grinding machine (1), especially for carrying out the process according to any of claims 20-26, comprising:

- a grinding tool (2) having at least two grinding surfaces (11a, 11b);
- at least two electrodes (60a, 60b), wherein each electrode (60a, 60b) is positioned in the vicinity of at least a portion of a different one of the grinding surfaces (11a, 11b), such that dressing areas (75a, 75b) are obtained in which a relatively small gap is present between the electrodes (60a, 60b) and the respective grinding surfaces (11a, 11b);
- feed means (70) for feeding electrolyte to the dressing areas (75, 75a, 75b); and
- a generator (20) for generating an electric current between the grinding surfaces (11a, 11b) and the electrodes (60a, 60b), via the electrolyte.

28. Grinding machine (1) according to claim 27, wherein at least one electrode (60a, 60b) is movable with respect to the respective dressing area (75a, 75b).

29. Grinding machine (1) according to claim 27 or 28, wherein at least one electrode (60a) is disc-shaped, comprising a flat dressing surface.

30. Grinding machine (1) according to claim 28 or 29, wherein at least one electrode (60a) is rotatable about a rotation axis (61a).

31. Grinding machine (1) according to claim 27 or 28, wherein at least one electrode (60b) comprises a concave dressing surface.

32. Grinding machine (1) according to claim 31, wherein the electrode (60b) is arranged such as to be able to perform a wobbling movement.

33. Grinding machine (1) according to claim 32, wherein the electrode (60b) is arranged such as to be able to simultaneously perform a curved reciprocating movement about a rotation axis (28) of the grinding tool (2) and a linear reciprocating movement in the direction of the same axis (28).

34. Grinding machine (1) according to any of claims 27-33, comprising brushing means (90a, 90b) for brushing at least one portion of at least one electrode (60a, 60b), wherein the brushing means (90a, 90b) are arranged outside the dressing area (75a, 75b).

35. Method for controlling the z-position of a slide (30) for supporting and positioning a workpiece (40), wherein the slide (30) is supported on a supporting surface (35) of a fixed base (36) through bearing means (31) and actuators (32) having an adjustable length, comprising the following steps:

a) determining a relation between a distance (D) between the supporting surface (35) and a flat virtual reference plane (51) on the one hand and possible combinations of x-positions and y-positions of the bearing means (31) on the supporting surface (35) on the other hand;

b) determining an actual x-position and y-position of the bearing means (31) on the supporting surface (35);

c) finding the actual distance (D) between the supporting surface (35) and the virtual reference plane (51) on the basis of the actual x-position and y-position of the bearing means (31) on the supporting surface (35) and the relation as determined during step a); and

d) determining the required length (L) of the actuators (32) on the basis of a known required distance (C) between the slide (30) and the virtual reference plane (51), a known length (B) of the bearing means (31), and the actual distance (D) between the supporting surface (35) and the virtual reference plane (51) as found during step c).

36. Method for controlling the z-position of a slide (30) for supporting and positioning a workpiece (40), wherein the slide (30) is supported on a supporting surface (35) of a fixed base (36) through bearing means (31) and actuators (32) having an adjustable length, comprising the following steps:

a) determining a relation between a distance (D) between the supporting surface (35) and a flat virtual reference plane (51) on the one hand and possible combinations of x-

positions and y-positions of the bearing means (31) on the supporting surface (35) on the other hand;

b) determining a relation between a distance (R) between the supporting surface (35) and an actual reference plane (52) on the one hand and possible combinations of x-positions and y-positions of the bearing means (31) on the supporting surface (35) on the other hand;

c) determining an actual x-position and y-position of the bearing means (31) on the supporting surface (35);

d) determining an actual distance (S) between the slide (30) and the actual reference plane (52);

e) finding the actual distance (D) between the supporting surface (35) and the virtual reference plane (51) on the basis of the actual x-position and y-position of the bearing means (31) on the supporting surface (35) and the relation as determined during step a);

f) finding the actual distance (R) between the supporting surface (35) and the actual reference plane (52) on the basis of the actual x-position and y-position of the bearing means (31) on the supporting surface (35) and the relation as determined during step b);

g) determining the required distance (S) between the slide (30) and the actual reference plane (52) on the basis of a known required distance (C) between the slide (30) and the virtual reference plane (51), the actual distance (D) between the supporting surface (35) and the virtual reference plane (51) as found during step e) and the actual distance (R) between the supporting surface (35) and the actual reference plane (52) as found during step f);

h) comparing the required distance (S) between the slide (30) and the actual reference plane (52) as determined during step g) to the actual distance (S) between the slide (30) and the actual reference plane (52) as determined during step d); and

i) adjusting the z-position of the slide (30) such that the actual distance (S) between the slide (30) and the actual reference plane (52) as determined during step d) equals the required distance (S) between the slide (30) and the actual reference plane (52) as determined during step g).

37. Machine, especially for carrying out the controlling method according to claim 36, comprising:

a cutting tool (10);

- a slide (30) for supporting and positioning a workpiece (40) with respect to the cutting tool (10);
- at least one invar straightedge;
- sensing means (53) for determining an actual distance (S) between the slide (30) and the invar straightedge; and
- controlling means (50) for controlling the position of the workpiece (40) with respect to the cutting tool (10),

wherein the sensing means (53) and the controlling means (50) are operatively connected, and wherein the controlling means (50) are able to control the position of the slide (30) on the basis of information regarding the actual distance (S) between the slide (30) and the invar straightedge as determined by the sensing means (53).

38. Method for controlling the z-position of a slide (30) for supporting and positioning a workpiece (40) which is subjected to a cutting treatment being performed by a cutting tool, comprising the following steps:

a) determining a position setpoint for the position of the slide (30) on the basis of a required depth of cut;

b) determining the value of a cutting force (F) acting on the slide (30);

c) comparing the value of the cutting force (F) to a value of a force limit;

d) adjusting the z-position of the slide (30) in such a way that the actual z-position of the slide (30) is further away from the cutting tool than the position setpoint, in case the value of the cutting force (F) is larger than the value of the force limit.

39. Controlling method according to claim 38, wherein the cutting force (F) is kept at the level of the force limit as long as the actual z-position of the slide (30) deviates from the position setpoint.

40. Control circuit (100) for controlling the z-position of a slide (30) for supporting and positioning a workpiece (40) which is subjected to a cutting treatment being performed by a cutting tool, comprising:

- a position controller (101) for controlling the z-position of the slide (30) on the basis of a given position setpoint; and
- a force controller (102) for determining a correction value for the position setpoint on the basis of information regarding a cutting force (F).

41. Control circuit (100) according to claim 40, wherein the force controller (102) comprises an interpreter (105), in which a relation between the correction value and the value of the cutting force (F) is stored.

42. Control circuit (100) according to claim 41, wherein the relation between the correction value and the value of the cutting force (F) contains a dead band, such that the correction value is zero for cutting forces (F) below a force limit.

43. Machine, comprising a slide (30) for supporting and positioning a workpiece (40) with respect to a cutting tool, wherein the slide (30) is supported on a supporting surface (35) of a fixed base (36) through bearing means (31) and actuators (32) having an adjustable length.

44. Machine according to claim 43, wherein the bearing means (31) are fixedly connected to the supporting surface (35) through the actuators (32), and wherein the slide (30) is movable with respect to the bearing means (31).

45. Machine according to claim 44, wherein a bottom surface (34) of the slide (30) is enlarged.